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LESSONS-LEARNED FROM AUTOMOTIVE GRI SUSTAINABILITY REPORTS: TO INVEST IN SUSTAINABLE PRACTICES

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Abstract

This paper focuses on analysis of sustainability reports of automotive companies and benchmarks Global Reporting Initiatives (GRI) in the automotive industry documented in the sustainability reports of selected companies. The investigation grounds on the main GRI initiatives taken by the world's 16 major automotive companies and benchmarks them against each other. With reference of GRI initiatives, also study outcomes will enable to help and draw a vision for the new Turkish National car in terms of sustainability practices.

The first part of the paper is based on explanations of some basic questions such as what sustainability is, why sustainability important for automotive, what GRI is and what does GRI bring to automotive discipline. The second part relates to the roadmap and benchmarking of the selected automotive companies' initiatives based on GRI keywords analysis of sustainability in the automotive industry. The findings show that the world's major automotive companies are broadly endeavoring to realize sustainability practices. Companies' focus points based on GRI reporting format have been investigated and explained regardless of region, country, cultural differences, company size, and product type.

This paper helps not only practitioners in the automotive industry to benchmarking themselves but also contribute to the new Turkish national car to create a new vision in terms of sustainability practices. Sustainability researchers and practitioners from other industries may follow how to develop sustainability practices from the comparative status report of the automotive industry.

Keywords: Sustainability, Automotive sector, Sustainability benchmarking, GRI reporting, Turkish national car

GRI OTOMOTİV SÜRDÜRÜLEBİLİRLİK RAPORLARINDAN ÖĞRENİLECEK DERSLER: SÜRDÜRÜLEBİLİR UYGULAMALARA YATIRIM YAPMAK

Öz

Bu makalede, otomotiv şirketlerinin sürdürülebilirlik raporlarının analizi ve söz konusu şirketlerin otomotiv endüstrisindeki sürdürülebilirlik raporlarında geçen Global Raporlama İnisiyatifleri (GRI)

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incelenmektedir. Araştırma, dünyanın 16 önemli otomotiv firması tarafından konu edilen, temel GRI inisiyatiflerine dayanmakta ve firmaları birbirleriyle kıyaslamaktadır. GRI inisiyatifleri referans alınarak, çalışma sonuçları aynı zamanda, sürdürülebilirlik uygulamaları açısından yeni yerli Türk otomobiline yardım etmeye ve bir vizyon çizmeye olanak sağlayacaktır.

Çalışmanın ilk bölümünde sürdürülebilirliğin ne olduğu, sürdürülebilirliğin otomotiv için neden önemli olduğu, GRI'nın ne olduğu ve GRI'nın otomotiv disiplinine ne getirdiği gibi temel soruların açıklamaları esas alınmaktadır. İkinci bölüm, söz konusu otomotiv şirketlerinin inisiyatiflerinin, otomotiv endüstrisindeki sürdürülebilirliğin GRI anahtar kelimelerinin analizine dayalı yol haritası ve kıyaslaması ile ilgilidir. Bulgular, dünyanın önde gelen otomotiv şirketlerinin sürdürülebilirlik uygulamalarını gerçekleştirmek için büyük çaba harcadıklarını göstermektedir. Bölge, ülke, kültürel farklılıklar, şirket büyüklüğü ve ürün türüne bakılmaksızın, GRI raporlama formatına göre şirketlerin odak noktaları incelenmiş ve açıklanmıştır.

Bu makale, sadece otomotiv endüstrisindeki uygulayıcılara kendilerini değerlendirmede yardımcı olmakla kalmayıp, aynı zamanda yeni yerli Türk otomobiline sürdürülebilirlik uygulamaları açısından yeni bir vizyon oluşturmada katkıda bulunmaktadır. Sürdürülebilirlik araştırmacıları ve diğer endüstrilerden uygulayıcılar, otomotiv endüstrisinin mukayeseli durum raporuna bakarak sürdürülebilirlik pratiklerini nasıl geliştirebileceklerini takip edebilirler.

Anahtar Kelimeler: Sürdürülebilirlik, Otomotiv sektörü, Sürdürülebilirlik kıyaslaması, GRI raporlama, Yerli Türk otomobili

1. Introduction

Corporate sustainability means operating responsibly on an economic, environmental and social level. The purpose of this research is to assess the current sustainability reports of worldwide automotive companies (based on the GRI G4 Guidelines [1]1) to find out sustainability-related activities by sharing their best practices, leveraging strengths and vision plans on sustainability, as almost all of the automotive companies are aiming a new vision for their close future.

They exercise economic, environmental and social categories specified in the GRI reporting guideline (GRI Global Reporting Initiative, 2015). Even though regulations vary from country to country, to envisage the research outcomes will help the prospective national Turkish automotive

[1] The GRI Sustainability Reporting Guidelines offer reporting principles, standard disclosures and implementation guidance for the preparation of sustainability reports by organizations, regardless of their size, sector or location. The Guidelines also offer an international reference for all those interested in the disclosure of governance approach and of the environmental, social and economic performance and impacts of organizations. The Guidelines are useful in the preparation of any type of document which requires such disclosure. The Guidelines are developed through a global multi-stakeholder process involving representatives from business, labor, civil society, and financial markets, as well as auditors and experts in various fields; and in close dialogue with regulators and governmental agencies in several countries. The Guidelines are developed in alignment with internationally recognized reporting related documents, which are referenced throughout the Guidelines.

The aim of G4, the fourth such update, is simple: to help reporters prepare sustainability reports that matter, contain valuable information about the organization's most critical sustainability-related issues, and make such sustainability reporting standard practice. G4 is designed to be universally applicable to all organizations, large and small, across the world. The features of G4 – to make the Guidelines easier to use, both for experienced reporters and for those new to sustainability reporting from any sector – are supported by other GRI materials and services.

company in terms of their works on economic, environmental and social sustainability topic. Furthermore, it will help determine the potential areas of actions for categories and aspects in the GRI reporting guideline, (GRI Global Reporting Initiative, 2015) according to the categorization of sustainability topics and focal points for Turkey.

Technology reshapes the automotive industry and global growth shifts to new markets. Many known automotive companies reported that the automotive industry would change more in the next five years than in the previous 50 years. In other words, automotive industry embarks on one of the most transformative periods in the history such as increase on electrical and hybrid car production, vehicle autonomy and sense of new mobilization.

The importance of economic, environmental and social efficiency will considerably increase. The pressure was clearly explained by Takamitsu Sawa (2011) in global scale, as "The twentieth century was an era in which economic development and growth were achieved by burning fossil fuels, or in other words by continually increasing carbon dioxide (CO2) emissions when delegations from 161 countries gathered in 1997 at the Kyoto International Conference Center and agreed to oblige industrialized nations to cut emissions of greenhouse gases (GHGs) – such as the CO2 that was emblematic of the twentieth century – it was an epoch-making event that marked a historic turning point. At the same time, it signified a farewell to a twentieth century model of industrial civilization that had been characterized by oil & automobiles." (Sawa, 2011)

Simultaneously, disruptive technologies are changing the way automotive companies' approach on new product development; developing a culture that promotes a focus on sustainable business practices will be essential for companies to be successful in light of the challenges that automotive companies currently face. (Industry Group Leader Report, 2016)

Turkish National Car

Turkey develops a new brand of national car and wants to invest in it in the future. The automotive industry in Turkey plays a key role in the manufacturing sector of the Turkish economy. The automotive companies are mainly located in the Marmara Region. A new one is about to be established in this region. Turkish government, vendors, universities and technology partners have been involved in the new brand of national car development process.

As Turkish automotive industry is planning a new brand, sustainability reports of automotive companies in the world were examined to accumulate knowledge and experience in the industry and considering emphasized points in the sustainability reports to give guidelines for developing the new Turkish brand. As manufacturing outputs, investments have been made within the new company vision and thousands of jobs may have been created with new decisions. However, economic, environmental and social performance indicators must be improved in parallel with the global automotive companies, primarily on low-carbon future and the reduction of average CO2 emissions etc. Since Turkey has the opportunity and the resources to shape its own future

by creating new car brand, it is going to be very important to understand sustainability lesson learned originated from well-known vehicle producers, give some clues, catch opportunities and behave proactively within the transformative period for the Turkish national car producer.

Understanding the impact of the prospective national car prior to mass production will help us to plan new generation vehicle requirements and may give new directions to stakeholder on the way of sustainability including plans for new vision of national car.

Additionally, the next generation of engineers must properly address the sustainability challenges like improving domestic supply chain whilst they launch a new brand of national car in Marmara region.

The aim of this study is to understand how GRI standards and sustainability principles are used by international automobile manufacturers so that the developing Turkish automotive industry may plan their investments accordingly and choose the right focus points related to sustainability and reporting. In order to reach this objective, the paper considers the most recent GRI reports of international automotive companies and analyze the contents of these reports to find the important sustainability topics the automotive companies focus on their GRI reports. As the Turkish automotive brand develops these focus points should be taken into account as the industry practice.

Sustainability in Automotive Industry

Industry practice usually concentrates on economic indicators and performance. However, it is getting more common releasing reports on environmental and social performance. When automotive companies exercise economic, environmental and social categories with together, they provide meaningful and comprehensive assessment of its company's sustainability credentials.

The automobile industry has made remarkable positive contributions to the world economy and people's mobility; however its products and processes are a significant source of environmental impact. (Nunes & Bennett, 2010)

Automotive industry will not be sustainable without facing some challenges. (Senxian, 2009)

- Climate change and environmental concern
- Energy scarcity, diversity, and security
- Resource constraints
- Regulatory intensification
- Regionally varied regulatory frameworks and policies
- Urban congestion and urban sprawl
- Deteriorating or inadequate infrastructure

- Public health and safety issues
- Growing consumer demand for more responsible products and companies

One of the major negative effects is on environment. The challenges surrounding issues of sustainability and its implementation are strongly felt in the automotive industry. The automotive industry has always been criticized for its negative influence on the environment and its role in global warming. (McPeak, 2014). However, considering even sustainability reports only, it is possible to find negative influences on many aspects. Further details are given in the content analysis of this research.

Apart from the external pressure on automotive companies about "go green", the case "Volkswagen emission crisis" in 2015 showed that non-compliances for environmental standards may spawn many problematic issues and more pressure for the companies.

Following recent emission scandals and the revelations of inconsistencies in both emissions results and their testing regimes in various countries, the automobile industry is under significant pressure on a number of sustainability topics ranging from environmental practices to risk management and corporate governance. Intensifying public scrutiny on fuel-efficiency and emissions testing is forcing carmakers to ensure that they deliver what they promise to customers, or else face both reputational and legal issues that may have long-lasting negative impacts. Stronger governance and compliance practices are needed to ensure that product management and innovation is conducted transparently and consistently with environmental standards.

Dealing with the combination of different stakeholders requests and trying to balance the opposite parties requests are real challenges for the automotive industry. For instance, political and social players are demanding more eco-friendly, more reduced CO2 emissions, alternative power trains and new mobility concept cars. On the other hand, customers and employees are demanding more labor safety, salaries and cleaner production. (Sukitsch, 2015)

2. Literature review

Sustainability

"Sustainability as a policy concept has its origin in the Brundtland Report of 1987. That document was concerned with the tension between the aspirations of mankind towards a better life on the one hand and the limitations imposed by nature on the other hand. In the course of time, the concept has been re-interpreted as encompassing three dimensions, namely social, economic and environmental. Sustainability is concerned with the well-being of future generations and in particular with irreplaceable natural resources—as opposed to the gratification of present needs which we call well-being." (Kuhlman, 2010)

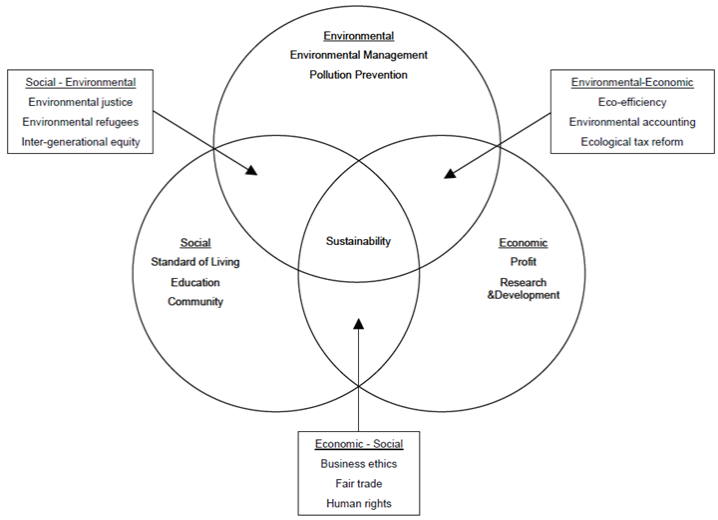

Figure 1: Issues within the three spheres of sustainability (Sandra, 2002)

Below in Table 1 summarizes environmental issues in the automotive industry (Martinuzzi, 2011).

Table 1. Environmental issues in automotive sector

Enviromental issues- Automotive sectors	Authors / Years
Green buildings, eco-design, green supply chains, green manufacturing, reverse logistics, innovation	Nunes, Bennett,2010
Packaging and waste reduction, eco-friendly processes and products in the supply chain. raw material decrease, reuse of material,	Thun, Müller,2010
CO2 emissions of cars, affordable mobility	Fournier, 2009 Zhu et.al., 2007, 2008
Reduction of air emissions, waste water and solid wastes, decrease in consumption of hazardous / harmful / toxic materials, decrease in frequency for environmental accidents	Mayer, 2000; OECD, 2004
GHG emissions from cars	Fergusson, 2007; Smith, Crotty, 2008
End of Life Vehicle	
Factors stimulating radical technological change (new entries, external shocks or crises, performance of the new technology, market changes and industry competition)	Van den Hoed, 2007
Car life cycle	Orsato, Wells, 2007 Steinweg, 2010
The biggest car manufacturers' approaches to the environmental issues	Hensley et al., 2009; Perujo, Ciuffo, 2010
Electric cars	Steenberghen, Lopez, 2008
Alternative fuels	Notter et al., 2010
Environmental Impact Assessment of Electric Vehicles	

Developed by the researcher

Automotive companies are known with hard working conditions and tough social standards although they are extensively recognized with their efforts for environmental topics. (Martinuzzi, 2011)

The role of all sectors of the automotive industry can be described, but not limited to, engineering, the training of apprentices, component making, motor vehicle production, after-market manufacturing, servicing, retail motor trades, and other forms of sales support. (Senate Economics References Committee, 2015)

Automotive industry has to deal with many economic challenges like over-capacity, markets fluctuations, enormous investments, also getting satisfactory profitability. (Orsato, 2007). For this reason, automotive companies, by missing social or environmental aspects, tend to establish their targets based on only economic data for many years. However, human effect is indispensable and environmental factor is crucial for the industry. (Golinska, 2014)

The various legislative carbon regulations caused a new approach to regulate the trade-off between carbon emissions and key economic factors such as logistics, procurement, production cost. (Günther, 2015)

When we focus on product, an automobile contains various types of ferrous and nonferrous metal, plastic, glass and rubber. These materials are subject to recycling process. The combination of new parts and recycled parts may be increased with the demand of reuse parts, plus availability of the related technologies. (Golinska, 2014)

From a different perspective, focusing on production location, even manufacturing facility can be developed by synthesizing the economic, environmental, and social aspects. (Chen, 2014)

The automotive industry, with its supply chain, employs more than 10% of the total workforce in the world (Zailani, 2015). This rate increases the importance of socially sustainable supplier selection process. (Mani, 2014)

Additionally, to perceive social impacts on stakeholders, it is crucial to observe the direct and indirect stakeholders affected by a manufacturing enterprise. A stakeholder is an individual or group of individuals who are affected negatively or positively by the progress of an organization's objectives. (Sutherland, 2016). To catch sustainability performance, in early phases of product design important parameters have to be known by the stakeholders. (Schoggl, 2017)

Social sustainability adds value to a sustainable society through ethical philosophical, psychical and technological aspects. Social sustainability can be described with social performance of internal human resources, external population.

Working conditions and social relationships are important sub-factors to understand social sustainability in the workplaces. The human rights, discrimination, child labors, health service, jobs creation, private life protection are known as an indispensable part of social aspects. (Garbie, 2016)

Sustainability Reporting and GRI Standards

Global Reporting Initiative (GRI) is well-known and widely used by companies worldwide for voluntary reporting. (De Jong, 2009).

Within the frame of 3 spheres of sustainability, critical factors in the automotive company reports were specified according to Global Reporting Initiative GRI report G4 Core guidelines.

Traditional tools and techniques are not sufficient combining the environmental, social and economic factors of sustainability and reporting them in a standardized form. However, measuring corporate sustainability performance is very important and complex. Data can vary enormously. For instance, it is very difficult to compare a company's sales figures with the volume of water it consumes. (Hahn, 2009)

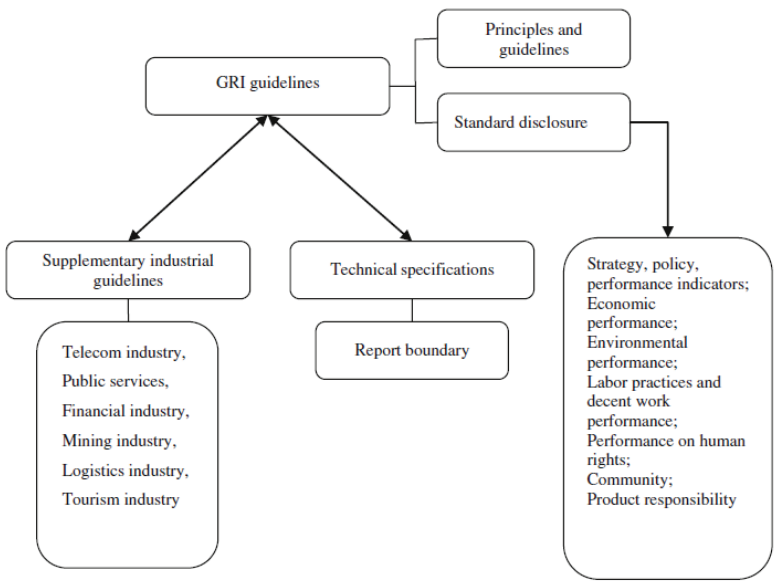

Figure 2: GRI framework (Kwang-Yong, 2014)

Corporate sustainability reporting provides benefits to both the reporting organization, and others who are anxious for sustainability issues. Some benefits for all stakeholders are as follows: (Cioffi, 2014)

- Occurring the link between financial and non-financial information and their performance
- Supporting control and liability on sustainability goals
- Decreasing expenses and improving efficiencies
- Awareness and reduction of risk related to environmental, social, and governance failures
- Benchmarking internal performance amongst companies and sectors
- Changing undesirable environmental, social, and governance influences
- Improving status and brand loyalty
- Collaboration with investors (Cioffi, 2014)

The Global Reporting Initiative (GRI) targets at providing a set of frameworks that are adopted by the public to open up economic, environmental and social performance. (Shin, 2014)

GRI is not only an independent, global nonprofit organization, also provides sustainability reporting guidelines. The fourth published version (G4) was released by GRI (Cioffi, 2014)

During the 1990s, as contribution of academic and global business communities, GRI was multi-stakeholder partnerships for sustainability or civil regulations. GRI founders enhanced then widely shared assumptions about the socially beneficial forms of engagement among business, markets, civil society and labor. GRI would serve with public claims to being socially responsible, transparent and accountable. (De Jong, 2009)

GRI has developed and revised the text of the guidelines starting with working various groups. A unique credibility, completeness, and legitimacy emerge originated from the multi-stakeholder, consensus-based approach on GRI's reporting principles and standard disclosures so they are trusted and widely used around the world. (GRI Global Reporting Initiative, 2015)

There is no limitation numerically for each of the categories (Economic, Environmental and Social). The number of material aspects is dependent on the outcome of the organization's processes for both defining report content and its stakeholder engagement. (GRI Global Reporting Initiative, 2015)

GRI does not judge the outcome or definition of report content, or the report itself, including its identified material aspects and boundaries. (GRI Global Reporting Initiative, 2015)

Maturity level of GRI Reporting seems to develop a new template to ensure robust reporting for all industries. However, below recommendations should be taken into consideration. (Bernard, 2015)

a) A database of historical data shall be used for standardize reporting
b) The data shall be categorized by geographic region and specific site
c) Future impact of G4 guidelines shall be appraised as voluntary reporting
d) Present data shall be complied with industry specific local & global goals
e) The oversimplified ideas shall be discarded

GRI reporting method

With the contribution of representatives from business, accountancy, human rights, environmental, labor, and governmental organizations, GRI guidelines have been developed. The framework contains indicators, or specific and usually quantitative measurements of an individual type of information so that performance can be tracked. (Sandra, 2002)

To promote sustainability reporting, Global Sustainability Standards Board (GSSB) has developed GRI documents through a unique multi-stakeholder consultative process involving representatives from organizations and report information users from around the world. The presence of GRI Standards is not only encourage use of the GRI Sustainability Reporting Standards and related interpretations also cause to proliferate reporting itself. (GRI Standards Glossary, 2016)

3. Methodology

In this paper, the sustainability reports of 16 automotive companies are analyzed with respect to model GRI standards (Table 2). The selected companies have launched many automotive projects and effected /are effecting automotive ecosystem with their transactions since they have more than 50 different vehicle brands in the group and their sister companies. (Figure 3) The reporting period is between 2013 and 2015 since the latest accessible public reports can be found in that period. 10 reports out of 16 belong to the year 2015 (Table 2). Similar patterns and common tendencies have been gone through based on three pillars of sustainability which has economic, environmental and social titles.

Figure 3: Automotive Companies and Brands (Business Insider, Feb. 19, 2015)

The data (Table 2) are collected from the automotive companies' corporate official websites and analyze according to GRI standards. During the study, below methods are employed:

a) Select most recent sustainability reports that are available from automotive companies which have historically known brand names regardless of their current position on merger, acquisition or any type of combination of companies. In this way, maximum impact area are targeted in the automotive sector except only electric car producers.

b) Search for keywords through sustainability reports according to GRI categories and aspects in the guidelines (Table 3).

c) Check the keywords meaning with GRI explanation. If it complies with the same meaning, accept that keyword is used.

d) In case of not found any keyword, read GRI explanation for the related area and match new keywords and their meaning "GRI Topic-specific disclosures". If it complies with the same meaning, accept that keyword is used and still valid for the study.

e) Eliminate the keyword unless keywords for GRI categories and GRI Topic-specific disclosures match with the related report.

Table 2. Selected Sustainability Reports

NO	Sustainability Report of Automotive Company
1	AUDI CSR report, 2014
2	BMW Group Sustainable Value Report, 2015
3	FIAT Sustainability Report, 2013
4	FORD Sustainability Report, 2014/15
5	GM Sustainability Report, 2014
6	HONDA Sustainability Report, 2016
7	HYUNDAI Sustainability Report, 2015
8	JAGUAR LAND ROVER Sustainability Report, 2014/15
9	MERCEDES DAIMLER Sustainability Report, 2015
10	NISSAN Sustainability Report, 2015
11	PSA Peugeot Citroën Sustainable Development and Annual Report, 2014
12	SCANIA Annual and Sustainability Report, 2015
13	TATA Motors, Sustainability Report, 2014/15
14	TOYOTA Sustainability Report, 2015
15	VOLKSWAGEN Sustainability Report, 2014
16	VOLVO CAR GROUP Sustainability Report, 2015

The purpose of this research is to clarify common and important points of automotive companies' sustainability reports. The companies are free to select their subjects and reporting formats even though GRI standards are available. The analysis of sustainability reports in the selected companies is provided with the purpose to help understand how automotive companies examine and investigate sustainability issues with the amalgamation of GRI standards.

Table 3 contains categories and aspects of GRI G4. The selected sustainability reports have been investigated according to the wording in the Table 3 which is also used the basis of keywords for content analysis. The details of assumptions and comments are explained in the Appendix - A. Note that 3 keywords which are "compliance", "overall" and "assessment" are disregarded from this table because no meaningful comparison can be made with these 3 words only.

Table 3. Categories & aspects in the guidelines (GRI, 2015)

CATEGORY	**ECONOMIC**	**ENVIRONMENTAL**
Aspects	*Economic Performance	*Materials
	*Market Presence	*Energy
	*Indirect Economic Impacts	*Water
	*Procurement Practices	*Biodiversity
		*Emissions
		*Effluents and Waste
		*Products and Services
		*Transport
		*Supplier Environmental Assessment
		*Environmental Grievance Mechanisms

CATEGORY	**SOCIAL**			
Sub-categories	**Labour Practices and Decent Work**	**Human Rights**	**Society**	**Product Responsibility**
Aspects	*Employment	*Investment	*Local Communities	*Customer Health & Safety
	*Labour/Management Relations	*Non-discrimination	*Anti-corruption	*Product & Service Labelling
	*Occupational Health and Safety	*Freedom of Association & Collective Bargaining	*Public Policy	*Marketing Communications
	*Training and Education	*Child Labour	*Anti-competitive Behaviour	*Customer Privacy
	*Diversity and Equal Opportunity	*Forced or Compulsory Labour	*Compliance	* Compliance
	*Equal Remuneration for Women and Men	*Security Practices	*Supplier Assessment for Impacts on Society	
	*Supplier Assessment for Labour Practices	*Indigenous Rights	*Grievance Mechanisms for Impacts on Society	
	*Labour Practices Grievance Mechanisms	*Supplier Human Rights Assessment		
		*Human Rights Grievance Mechanisms		

Content analysis based on GRI report G4 Core guidelines

According to GRI report G4 Core guidelines, highlighted points in automotive sustainability reports have been investigated.

The highlighted points and keywords mentioned in GRI on these reports link to sustainability were studied and compared. Variables are determined considering parameters in the GRI standards. (GRI Global Reporting Initiative, The implementation manual, 2015). To visualize which parameters are used, a matrix tableau is occurred and kept tally to keywords as findings.

Table 4. Comparative Status of Automotive Companies Vs GRI Contents (Sample demonstration)

AUTOMOTIVE COMPANY vs GRI CONTENT	AUDI	BMW	FIAT	FORD	GM	HONDA	HYUNDAI	JAGUAR LR	MERCEDES	NISSAN	PSA	SCANIA	TATA	TOYOTA	VOLKWAGEN	VOLVO
Report for the period *	14	15	13	15	16	15	15	15	15	15	14	15	15	15	14	15
GRI STANDARD DISCLOSURES	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
General Standard Disclosures	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Strategy and Analysis	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Organizational Profile	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Identified Material Aspects and Boundaries	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Stakeholder Engagement	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Report Profile	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Governance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ethics and Integrity	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Specific Standard Disclosures	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Category: Economic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Category: Environmental	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Category: Social	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
– Sub-Category: Labour Practices and Decent Work	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
– Sub-Category: Human Rights	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
– Sub-Category: Society	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

** The last 2 digit of the latest reporting year is shown in the table*

Some reports do not contain some of GRI items. Surely, it is not compulsory and left to company choice. However, it is strictly stick to GRI keywords and items. (GRI Global Reporting Initiative, 2015). The searching criteria are defined in APPENDIX A - Keywords searching criteria, interpretations and assumptions.

4. Sustainability report analysis – Findings and Analysis

Table 5 (a) and (b) show the frequency usage of GRI keywords for sustainability reports of 16 major automotive companies in the years 2013 and 2015. In this case we can firstly make two sets of comparisons. We can look at the frequency in "GRI general standard disclosure" items for each company report, and we can compare the "GRI Specific Standard Disclosures" items for the same companies' reports.

Considering message of diagram, it is fair to say that automotive companies ready to make practice for "GRI general standard disclosure" rather than "GRI Specific Standard Disclosures". They inherently tend to give utmost priority to the items of "Environmental category" such as, materials, energy, water, biodiversity, emissions, effluents and waste, products and services since they have been criticized many times for this category.

Some companies like Fiat, Honda, Volkswagen, Tata, Hyundai and Ford in their reporting format mostly prefer to use GRI items keywords so it is easy to track their quantitative metrics and qualitative explanations whereas Audi, JLR, PSA Peugeot.

Table 5 (a). The Comparative Status of Automotive Companies regarding GRI Economic and Environmental aspects

AUTOMOTIVE COMPANY vs GRI GUIDELINE MATRIX	AUDI	BMW	FIAT	FORD	GM	HONDA	HYUNDAI	JAGUAR LR	MERCEDES	NISSAN	PSA	SCANIA	TATA	TOYOTA	VOLKWAGEN	VOLVO
# of company	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Report for the period *	14	15	13	15	16	15	15	15	15	15	14	15	15	15	14	15
General Standard Disclosures																
Strategy and Analysis	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Organizational Profile		✓	✓		✓	✓	✓		✓	✓	✓	✓	✓		✓	✓
Identified Material Aspects and Boundaries		✓	✓	✓	✓	✓	✓					✓	✓		✓	✓
Stakeholder Engagement	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Report Profile		✓	✓		✓	✓	✓		✓			✓	✓		✓	✓
Governance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ethics and Integrity		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓
Specific Standard Disclosures																
Category: Economic																
Economic Performance		✓	✓	✓	✓	✓	✓			✓		✓	✓		✓	
Market Presence		✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓
Indirect Economic Impacts		✓	✓	✓	✓	✓	✓					✓			✓	✓
Procurement Practices	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Category: Environmental																

Materials	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Energy	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Water	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Biodiversity	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
Emissions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Effluents and Waste	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Products and Services	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Transport	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Supplier Environmental Assessment		✓	✓	✓	✓	✓	✓								✓	
Environmental Grievance Mechanisms		✓	✓	✓		✓									✓	

** The last 2 digit of the latest reporting year is shown in the table*

Citroën either touch upon few items or adopt a policy to use their own terminology in their reporting format. In this research, it is aimed to concentrate on showing differential points from GRI basement in the guidelines. Observing the table results, we may highlight a few:

•Although most companies have mentioned about the term "biodiversity" except two Scandinavian brand Scania and Volvo. (Table 5.a)

•Other countries have mentioned Stakeholder engagement in their report but PSA Peugeot Citroën.

Apparently, there are some missing points especially in sub-group of Social category needs to be adjusted.

For instance, sustainability reports which need to be investigated for the below items that belong to sub-category "society" Table 5.b.

- Public Policy
- Anti-competitive behavior
- Supplier Assessment for Impacts on Society
- Grievance Mechanisms for Impacts on Society

Table 5 (b). Comparative Status of Automotive Companies regarding GRI Social aspects

AUTOMOTIVE COMPANY vs GRI GUIDELINE MATRIX	AUDI	BMW	FIAT	FORD	G M	HONDA	HYUNDAI	JAGUAR LR	MERCEDES	NISSAN	PSA	SCANIA	TATA	TOYOTA	VOLKWAGEN	VOLVO
# of company	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Report for the period *	14	15	13	15	16	15	15	15	15	15	14	15	15	15	14	15
Category: Social																
– Sub-Category: Labour Practices and Decent Work																
Employment	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Labour/Management Relations	✓	✓	✓	✓	✓	✓	✓		✓	✓			✓	✓	✓	
Occupational Health and Safety	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Training and Education	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Diversity and Equal Opportunity	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Equal Remuneration for Women and Men	✓	✓	✓	✓		✓		✓	✓	✓		✓	✓	✓	✓	✓
Supplier Assessment for Labour Practices		✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	
Labour Practices Grievance Mechanisms		✓	✓	✓		✓	✓					✓	✓		✓	
– Sub-Category: Human Rights																
Investment	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Non-discrimination	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓		✓	
Freedom of Association and Collective Bargaining	✓	✓	✓	✓	✓	✓	✓		✓			✓	✓		✓	✓
Child Labour	✓	✓	✓	✓	✓	✓	✓		✓	✓			✓	✓	✓	✓
Forced or Compulsory Labour	✓	✓	✓	✓		✓	✓		✓	✓			✓	✓	✓	✓
Security Practices	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	
Indigenous Rights			✓	✓		✓			✓				✓		✓	
Supplier Human Rights Assessment	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Human Rights Grievance Mechanisms		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	
– Sub-Category: Society																
Local Communities	✓		✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓
Anti-corruption	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Public Policy			✓	✓	✓	✓	✓						✓		✓	
Anti-competitive Behaviour		✓	✓	✓		✓	✓						✓		✓	
Supplier Assessment for Impacts on Society		✓	✓	✓	✓	✓									✓	
Grievance Mechanisms for Impacts on Society		✓	✓	✓	✓	✓	✓								✓	
– Sub-Category: Product Responsibility																
Customer Health and Safety	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Product and Service Labelling		✓	✓	✓	✓	✓	✓		✓	✓			✓		✓	
Marketing Communications			✓			✓	✓	✓	✓	✓			✓	✓	✓	
Customer Privacy	✓	✓	✓	✓	✓	✓	✓		✓				✓	✓	✓	

** The last 2 digit of the latest reporting year is shown in the table*

In the analysis of categorical research according to keyword content, the mentioned 16 companies prefer to touch on keywords in the Table 3 with the frequency stated below in their reports.

GRI Keywords fully mentioned in 16 different reports:

In the sustainability reports, any explanation is fully available for all selected 16 automotive companies for the below keywords;

-Keywords from General Standard Disclosure section

"Strategy and Analysis", "Governance"

-Keywords from Specific Standard Disclosures section

Category Economic: "Procurement Practices"

Category Environmental: "Materials", "Energy", "Water", "Emissions", "Effluents and Waste", "Products and Services"

Category Social: "Employment", "Occupational Health and Safety", "Training and Education", "Diversity and Equal Opportunity", "Investment", "Customer Health and Safety"

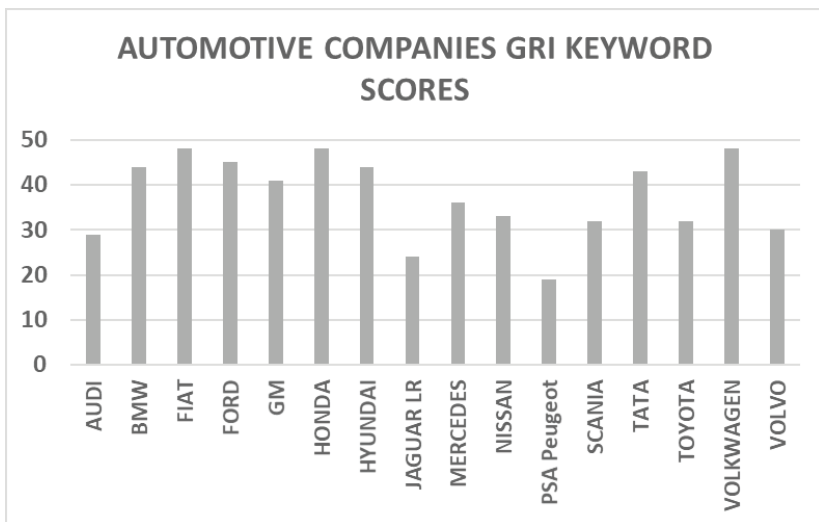

Figure 4. Keyword Scores Based on Automotive Companies

GRI Keywords in between 10 and 16 mentioned in different reports:

Data coverage is relatively good in the sustainability reports, in other words at least 10 but not all companies' report contain these key terms

- Keywords from General Standard Disclosure section

"Organizational Profile", "Identified Material Aspects and Boundaries", "Stakeholder Engagement", "Report Profile", "Ethics and Integrity"

- Keywords from Specific Standard Disclosures section

Category Economic: "Economic Performance", "Market Presence"

Category Environmental: "Biodiversity", "Transport"

Category Social: "Labor/Management Relations", "Equal Remuneration for Women and Men", "Supplier Assessment for Labor Practices", "Non-discrimination", "Freedom of Association and Collective Bargaining", "Child Labor", "Forced or Compulsory Labor", "Security Practices", "Supplier Human Rights Assessment", "Human Rights Grievance Mechanisms", "Local Communities", "Anti-corruption", "Product and Service Labeling", "Customer Privacy"

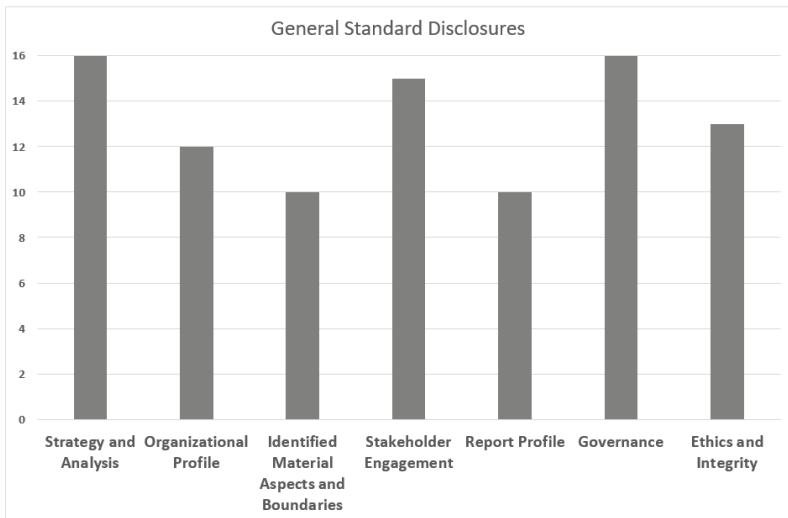

Figure 5 (a). General Standard Disclosures out of Selected 16 Reports

GRI Keywords mentioned lower than 10 in different reports:

- Keywords from General Standard Disclosure section: No keywords/term lowers than 10
- Keywords from Specific Standard Disclosures section

Category Economic: "Indirect Economic Impacts"

Category Environmental: "Supplier Environmental Assessment", "Environmental Grievance Mechanisms"

Category Social: "Labor Practices Grievance Mechanisms", "Indigenous Rights", "Public Policy", "Anti-competitive Behavior", "Supplier Assessment for Impacts on Society", "Grievance Mechanisms for Impacts on Society", "Marketing Communications"

Figure 5 (a), (b) and (c) which illustrates GRI data relating to frequency of keywords usage in the total 16 different reports.

The graphs show that the mentioned keywords usage of GRI items has relatively lower frequency in the selected sustainability reports. Considering GRI explanations, these concepts to be enriched and detailed in the various automotive sustainability reports.

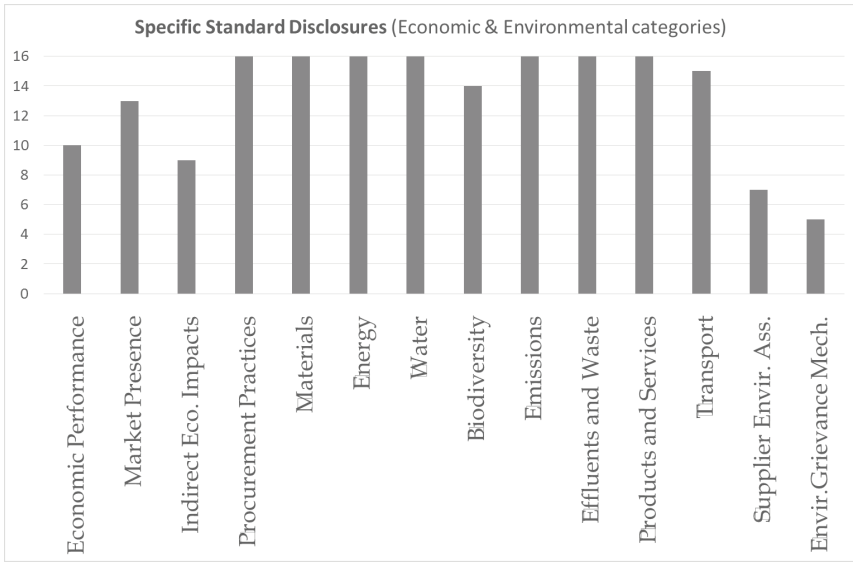

Figure 5 (b). Specific Standard Disclosures (Economic & Environmental categories) out of Selected 16 Reports

Keywords in the economic, environmental and social category have the poorest level of data coverage in the study are itemized and narrowed down below:

- Indirect Economic Impacts
- Supplier Environmental Assessment
- Environmental Grievance Mechanisms
- Labor Practices Grievance Mechanisms
- Indigenous Rights
- Public Policy
- Anti-competitive Behavior

- Supplier Assessment for Impacts on Society
- Non-discrimination
- Grievance Mechanisms for Impacts on Society
- Marketing Communications

GRI stakeholders may go further analysis on these aspects to comprehend the reason why frequency in automotive sustainability reports are lower.

Another different picture emerges when it is looked into sub-category "society". No data is available for JLR, Mercedes, Nissan, PSA, Scania, Toyota, Volvo and Audi throughout key terms "Public Policy", "Anti-competitive Behavior", "Supplier Assessment for Impacts on Society", "Grievance Mechanisms for Impacts on Society"

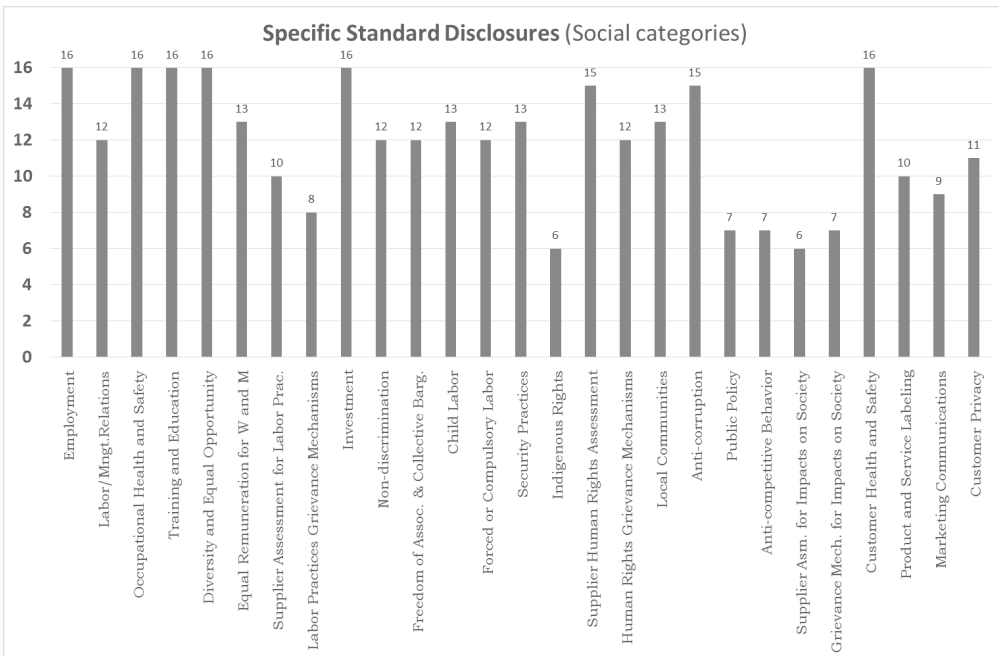

Figure 5 (c). Specific Standard Disclosures (Social categories) out of selected 16 Reports

Keywords in social category which are "Employment", "Occupational Health and Safety", "Training and Education", "Diversity and Equal Opportunity", "Investment", "Customer Health and Safety" consistently reported in the selected sustainability reports whereas "Indigenous rights" term is limited to 6 automotive companies.

Table 6 shows that no uniform performance indicators emerges in category basis for the selected automotive companies

Table 6. GRI G4 Performance Indicators

GRI CONTENT PERCENTAGE (%)	AUDI	BMW	FIAT	FORD	GM	HONDA	HYUNDAI	JAGUAR LR	MERCEDES	NISSAN	PSA	SCANIA	TATA	TOYOTA	VW	VOLVO
Report period *	14	15	13	15	16	15	15	15	15	15	14	15	15	15	14	15
General Std. (%) (%) Disclosures	43	100	100	71	100	100	100	43	86	71	43	100	100	57	100	100
Economic (%)	25	100	100	100	100	100	100	25	50	50	50	100	75	50	100	75
Environment (%)	80	100	100	100	90	100	90	80	80	80	70	70	80	80	100	70
Social (%)	63	85	100	96	78	100	89	44	74	67	26	52	93	67	100	48

** The last 2 digit of the latest reporting year is shown in the table*

5. Discussion and Conclusion

The purpose of this paper is to exercise sustainability reports which are selected from automotive companies in terms of economic, environmental and social categories specified in the GRI reporting guideline, to address & assess the differences from GRI guideline and gather lessons-learned to give a new vision for Turkish national car under the light of aggregate benchmark.

The benefits of sustainability reporting are clear. Building trust, transparency about non-financial performance can help to reduce reputational risks, open up dialogue with stakeholders such as customers, communities and investors, and demonstrate leadership, openness and accountability. In sustainability report, giving GRI index for the related subject not only standardize the reporting format but also allow company to give direction to their strategy by years. Making companies accountable, transparent and voluntary to comply regulations may be instigated by consumer expectations.

Companies with their sustainability reports share their sustainability procedures, comply with obligatory reporting conditions, meet stakeholder requests and occur traceability to sustainability. (Cioffi, 2014)

Although the sustainability reports give us a clear idea upon the companies' focus points, well-prepared reports do not mean that you encounter a most sustainable car company. After Volkswagen emission crisis in 2015, in other words, manipulating the vehicle emission tests, all global automotive players are in a new position that they should assess both establishing an internal auditing system and having certified as to comply with regulations.

Recommendations for New National Car

In this research, the analysis points out that a new prospective automotive company must be well-aware of the significance of 3 spheres of sustainability. To consider only production facilities, the amount of investment and new technology will be incomplete to achieve sustainable business.

Sustainability-driven transformation will take long time since multi-stakeholders must involve in the activities. However, it is highly expected that there is a supply chain sustainability also effectively managed considering not only product, process, environmental performance also potential human rights concerns in supplier factories.

Next challenge will be engaging employees and supply chain in sustainability since automotive industry is facing the global shortage of talented employees.

When these challenges are cautiously examined, potential gaps can be defined and new initiatives can be turned into new projects for these areas.

The path to transformative period, new Turkish national car and its related automotive companies shall make various but bounded commitments regarding 3 spheres of sustainability. Below recommendations are also valid for new national car.

Recommendation for strategy

One of the most important issues for strategy is reporting on KPIs. This reporting technique can be constructed either performance based (quantitative) or business policies and processes. (Lydenberg, 2010)

Since it is a big challenge to integrate the overall vehicle, develop mobility services and enhance the brand, OEMs tend to focus on their core competencies i.e. the body-in-white and powertrain so they can manage the greater number of models and variations also complexity. (Hanna, 2014)

A dramatic change on traditional automotive value chain is expected. For instance, the shape, material, and even the method of construction of the automotive chassis may change dramatically. Although there may be gradual progress on vehicles with traditional combustion engines, the electrification of the powertrain will cause disruptive progress for automotive value chain. (Hanna, 2014)

Training series can be useful as a company strategy; it can be worked on some performance standards for the whole supply chain in order to raise labor standards and human rights. For supply chains, OEMs may increase sustainability awareness by teaming up with their key suppliers.

Another important point regarding strategy to launch sustainability projects or programs effectively is managing multi-stakeholder process in a professional manner. All automotive companies make risk management in sustainability subjects like their other projects.

Recommendation for Employee

The automotive industry is resource-intensive. Human capital is a crucial factor for creating sustainable stakeholder value over time. All sustainability reports declared that respect for human rights and encouraging and supporting legal compliance are fundamental prerequisites for fair competition. The companies monitor the employee career life cycle from recruiting to retirement in order to help employees to balance work and family life, execute engagements with trade unions, examine any unresolved conflicts, respect for diversity, supporting for career development and create a fair workplace.

In this study, Table 5.b shows that labor practices, human rights and society should be elaborated in the various automotive sustainability reports.

One of the sustainability targets is to set up performance management processes and systems for employees. All companies are very sensitive to use the company's code of conduct. All employees are required to comply with the company's code of conduct.

Recommendation for product

Reducing emissions is one of the biggest challenges for the automotive industry today. Automotive companies' future vision is to continue to reduce emissions and improve fuel efficiency while still ensuring customers satisfaction.

Automotive companies carry out extensive R&D in advanced hybrid and battery electric systems. Electric drive modules are pioneering low and zero emissions powertrain research.

The aim of the automotive companies is not only catch zero waste and water-efficiency in light of projected business growth but also continue in reuse, recycling and recovery of materials. Detail explanations on raw, recycled, hazardous, renewable and waste materials are observed in the sustainability reports. In addition, the end of a vehicle's lifecycle plays an important role in its overall environmental footprint

Recommendation for operations

Mostly expected platforms at automotive plants and among different suppliers are to ensure the highest sustainability standards. Assessments of supplier compliance with sustainability criteria perform through self-assessment questionnaires. Both supplier portals and new agreements with vendors shall contain compliance with environmental, social and governance clauses including human rights and working conditions, respect for the environment and business ethics principles. Suppliers must prove themselves to implement certified systems for health and safety management and for environmental management. To verify performance and progress, action plans are monitored regularly and audits are coordinated with suppliers.

Automotive companies develop projects within lean management principles are designed to achieve the broadest engagement of employees and to systematically reduce losses and waste, ultimately reaching zero accidents, waste, breakdowns and inventories.

Another operative subject is optimization of transport capacity and reducing use of packaging and protective materials. This subject also cover highly cost effective solutions in itself. It is well-known by automotive companies that the main source of environmental impact in car production is customarily the paint-shop. It can be started from paint-shop to make improvements.

Recommendation for environment

It is fair to say that minimizing of CO2, NOx, SOx,VOC emissions will be one of the top items for all fossil base automotive companies in their sustainability reports. Vehicles and operations generate environmental impacts and climate changes. With regard to environmental performance, reducing CO2, NOx, SOx, VOC emissions per vehicle are on the current carmaker's agenda. Carmakers' role in addressing climate change and reducing the CO2, NOx, SOx, VOC emissions of their products life cycle ought to be clearly identified.

Although vehicles directives are implemented to encourage manufacturers to develop components and vehicles that are easy to dismantle and recycle, most of materials from the old cars are not recycled into new cars.

As an important sustainable practice, "Green supply chain management" is definitely expected from automotive companies to continue their sense of sustainability practices with their stakeholders such as green buildings, eco-design, green manufacturing, green innovation & logistic solutions.

Automotive companies tend to promote comprehensive and effective initiatives for supporting management decisions and achievement of the company projects. In addition, they try to reduce environmental impact of products with lifecycle assessments.

It is advised actively communicate the companies' environmental performance during the public exhibitions by explaining environmental and safety aspects of their products, processes and business.

Recommendation for Society

In the automotive industry, charitable donations are very familiar, particularly contribution in the areas of education, training and employment. Companies are tend to set up a corporate social responsibility strategy and allocate resources and undertake several projects to support education, health and invest in science, technology and engineering education. Voluntary basis projects help local society. In particular, the companies expand expenditures in education, medical and healthcare, emergency relief, traffic rules and other social contributions, considering growing social needs and demands.

The first priority to the involvement of local employees and suppliers is strongly required by automotive companies in order to create jobs, stimulate the local economy and strengthen social ties within each community.

The second, working conditions for plant workers producing vehicles and parts overseas have been closely examined in recent years. Working hours and wage issues have been the focus of human rights allegations for many major automotive companies. It is also valid for their supply chain networks.

Next, increase of mobility and the enhancement of transportation infrastructure bring an immense accountability for automotive companies to make contributions to the advancement of society and lead to social problems such as road congestion and traffic accidents.

The last, developing supplier assessment and establishing grievance mechanisms will hugely contribute the expansion of sustainability practices and allow new communication channels for the companies.

Further research

In this study, the information is classified according to the subjects and keywords, not the content. However, further research can cover below contents;

- Tabulate the frequency of parameters and keyword usage so weighted status can be examined. In other words, some aspects which have the maximum frequency in the automotive sustainability reports can be selected and narrowed down by means of the specified criteria.
- Quantitative and qualitative content can be differentiated and a comparative status of quantitative KPIs can be biased KPIs are typically measured in real time, but the results are often assessed continuously so that progress can be measured on a daily, weekly, and yearly basis. (Brockett, 2012)
- Comprehensive reporting requires three information types to be provided for each disclosed GRI item: (i) vision and goals (VG); (ii) management approach (MA); and performance indicator (PI) (Bouten et al., 2011). Reports can be examined considering three information types.
- To evaluate the sustainability performance, development and evolvement of sustainability reports for the same brands can be observed by years
- In this research, electric car producer's TESLA report is not regarded since the report is not fully comply with GRI requirements and partially announced in different platforms. Another searching area may be the comparative status in reporting among electric, hybrid and fossil fuel car producers.
- Leadership under sustainability management should be investigated to address the sustainability challenges properly for the next generation of engineers.

- There may be a gap between what companies declare they do in their sustainability reports and what they actually do so practicable or not operable cases can be exemplified.
- Considering the third parts, like associations, sectorial groups from automotive sector, an analysis may be occurred how vehicle-producers in the world automotive industry implement corporate sustainability and what kind of challenges they face individually or a part of an association (UK Automotive sustainability report, 2016; Holweg, 2009).

Implications

To achieve long-term business success and catch a sustainable company, it is vital to put all sustainability issues on the daily agenda. Embedding the sustainability principles into the collective mind-set and behaviors is an important part of the strategy. Vast majority of OEMs try to engage their employees through special campaigns.

Each company has heterogeneously presented the GRI aspects so far. This will not allow determining proper performances in relation to the environmental, economical, and social criteria in their report. It is strongly recommended to communize GRI terms among automotive companies and start to form templates working with sub-groups.

Appendix A. Keywords searching criteria, interpretations and assumptions

A.1. General Standard Disclosures

Strategy and Analysis: Companies are intended to explain their corporate strategy to support sustainability and prove their sincerity with new projects, investment plans and roadmaps approved & committed by top management. All reports include this item

Organizational Profile: 4 reports do not contain direct organizational profile to GRI index whereas others do

Identified Material Aspects and Boundaries: GRI Indexing method has been looked through

Stakeholder Engagement: Philosophy and way of communication are defined and exemplified

Report Profile: Sustainability reports cover reporting profile or not

Governance: All reports include this item

Ethics and Integrity: Keywords, ethics and integrity, searched and pointed from reports

A.2. Specific Standard Disclosures

Category: Economic

Economic Performance: Some automotive companies prefer to share either GRI indexing or direct information on economic performance

Market Presence: It may not be found in the reports since some companies may prefer to state their market presence in the annual reports

Indirect Economic Impacts: The companies which mentioned and gave *Indirect Economic Impacts GRI* indexing was pointed out

Procurement Practices: Procurement process from supplier and raw material management were mentioned in the report

Category: Environmental

Materials: Raw, recycled, advance, design, packaging, hazardous, renewable and waste materials have been gone through from sustainability reports.

Energy: Energy management, energy consumptions, renewable energy and energy use are the key words for this title

Water: Water usage and wastewater management is crucial for sustainability. Investigated

Biodiversity: Land use & biodiversity are automotive companies' agenda

Emissions: All fossil fuel car producers target to minimize CO2 emissions and reduce greenhouse gas (GHG) emissions

Effluents and Waste: All selected companies mention their activities about "waste"

Products and Services: All selected companies mention about their "Products & Services"

Compliance: It is not considered in the Table 5 (a) (b) since it is general term

Transport: All selected companies mention about their activities on "transportation & transport" but PSA Peugeot Citroën

Overall: It is not considered in the Table 5 (a) (b) since it is general term

Supplier Environmental Assessment: Keywords, "Supplier Environmental Assessment", searched and pointed from reports

Environmental Grievance Mechanisms: It has been checked whether environment-related complaints are received through the official complaint resolution or not

Category: Social

Sub-Category: Labor Practices and Decent Work

Employment: All reports include this item

Labor/Management Relations: Only BMW stated their employee-management relations in the materiality matrix of sustainability report

Occupational Health and Safety: All reports include this item

Training and Education: All reports include this item

Diversity and Equal Opportunity: Diversity and equal opportunity for women & men investigated. All reports include this item

Equal Remuneration for Women and Men: Keyword is "Remuneration"

Supplier Assessment for Labor Practices: Keywords are "Supplier Assessment" and "Labor Practices"

Labor Practices Grievance Mechanisms: Keywords are "Grievance" and "Labor Practices"

– Sub-Category: Human Rights

Investment: All reports include this item

Non-discrimination: Discrimination & Non-discrimination keywords are searched together

Freedom of Association and Collective Bargaining: Keywords are "Freedom of Association" & "Collective Bargaining"

Child Labor: Keyword is "Child Labor"

Forced or Compulsory Labor: Either "Forced" or "compulsory labor" are investigated for both spelling Labor/labour

*Security Practices: S*earched for "Security Practices or policy" and accepted all type of security data, training, personnel

Indigenous Rights: Keyword is "Indigenous"

Assessment: It is not considered in the Table 5 (a) (b) since it is general term

Supplier Human Rights Assessment: Keyword is "Supplier Human Rights"

Human Rights Grievance Mechanisms: Keywords are "Grievance" and "Human Rights"

– Sub-Category: Society

Local Communities: Keyword is "Local communities"

Anti-corruption: Keyword is "anti-corruption"

Public Policy: Keyword is "public policy"

Anti-competitive Behavior: Keywords are "Anti-competitive" and "Behavior"

Compliance: It is not considered in the Table 5 (a) (b)

Supplier Assessment for Impacts on Society: Keywords are "Supplier Assessment" and "Impacts on Society"

Grievance Mechanisms for Impacts on Society: Keywords are "Grievance" and "Impacts on Society"

– Sub-Category: Product Responsibility

Customer Health and Safety: Safety concept is searched for

Product and Service Labeling: Keywords are "Product labeling" and "Service Labeling"

Marketing Communications: Keywords are "Marketing" and "Communication"

Customer Privacy: Keywords are "Customer" and "Consumer privacy"

Compliance: It is not considered in the Table 5 (a) (b) since it is general term

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